



PHOTONICS RESEARCH GROUP

Navolchi Update November 2013

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Physics and Chemistry of Nanostructures Group



<http://www.nano.UGent.be>

Overview of activities

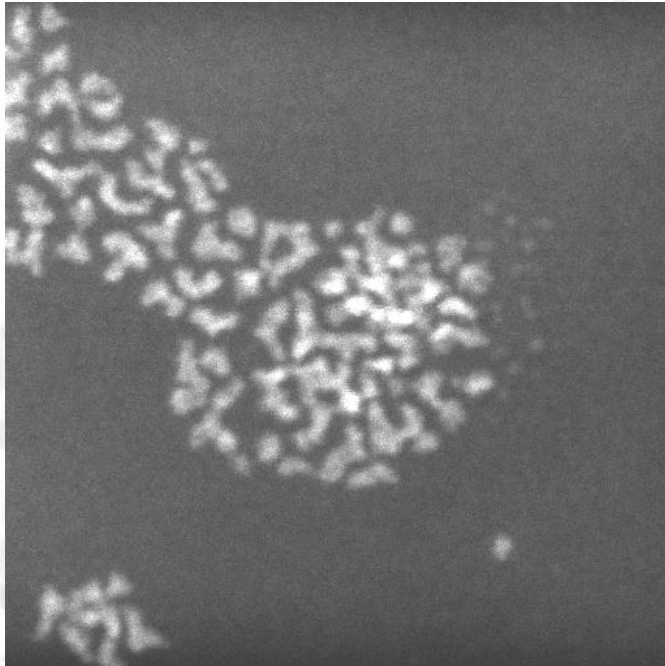
- **HgTe quantum dots**
 - Low-threshold gain confirmed on number of samples
 - Extensive discussion on interpretation with theory group (C. Delerue, IEMN, Lille, France)
 - Opto-electronic properties calculated
 - Requirements for low-threshold gain defined
 - Quantification of effects not possible using their theoretical framework (tight-binding calculations)
- **Attempt to patent results stopped since prior art was found (generic QD lasing patent Klimov et al.)**

HgTe Quantum Dots

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- **Synthesis tuning further explored (access to 1000-2500 nm wavelength range)**
- **Sample sent to UVE**

HgTe Quantum Dots

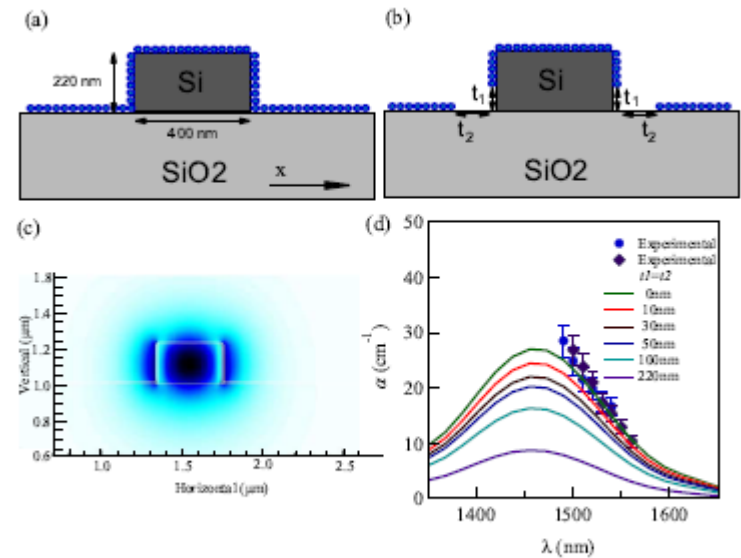
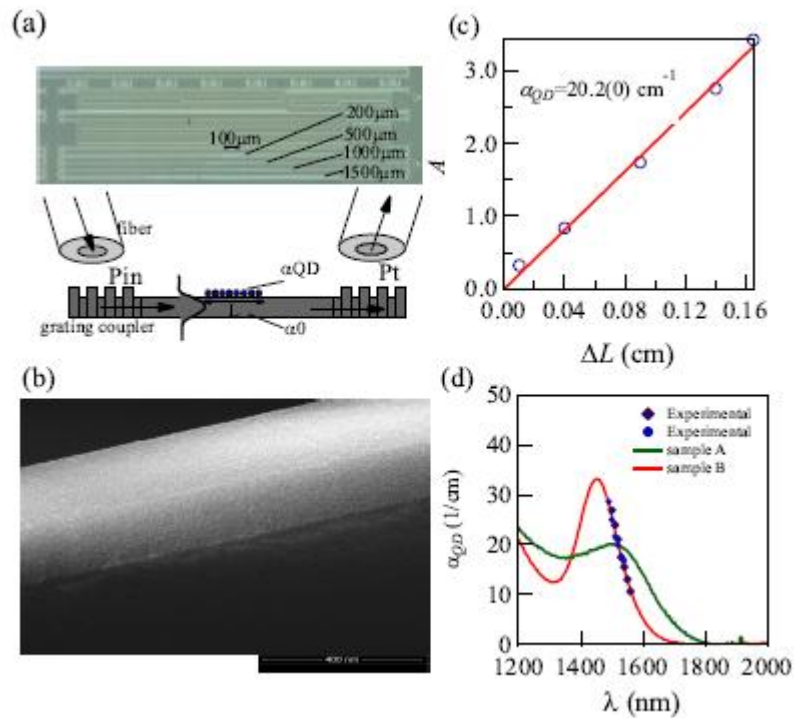
- **Big issue – nanocrystals appear clustered in TEM**



- Effect of drying on TEM grid
- Already like this in solution?
- Further measurements planned to sort this out + adaptations to the synthesis to prevent it

QD coated waveguides

- Theory on waveguide absorption coefficient extended to strip waveguides



Outlook

- **Understanding clustering in HgTe QD synthesis**